

ABSTRACT

A phase shifter element for selectively varying the phase of signals of desired frequencies or frequency range passing through an adjacent transmission line associated with, for example, an antenna array to electrically down-tilt the array's electromagnetic wave pattern. The phase shifter element comprises a planar dielectric member having at least three discrete co-planar interactive segments extending from an edge thereof and arranged to movably overlap the adjacent transmission line to vary its dielectric constant. Optimum dimensions of each interactive segment and optimum widths of gaps defined by opposite edges of adjacent segments being determined by a computer optimisation program, such that the phase shifter element achieves a wide operating frequency and minimum aggregate reflection.